

SOST Research Profile-2023

SOST staff have been publishing widely on various pressing issues in highly-ranked Quartile 1 journals. The School celebrated one edited book and 24 high quality publications in 2023 in journals including:

- Frontiers in Marine Science
- Journal of New and Pacific Studies
- Mitigation and Adaptation Strategies for Global Change
- Renewable Energy (3 Articles)
- Journal of Environmental Law and Policy (2 Articles)
- Journal of the Saudi Society of Agricultural Sciences
- Ecological Indicators
- Clean Technologies and Environmental Policy
- Cognitive Computation
- International Journal of Environmental Science and Technology
- International Journal of Innovative Science and Research Technology (IJISRT).
- Applied Computing and Informatics
- High Confidence Computing
- Blockchain: Research and Applications
- Heliyon
- Computer and Electrical Engineering
- The International Journal of Computers and Their Applications
- The Hong Kong Journal of Social Sciences
- Data in Brief
- International Journal of Biometeorology
- Earth Science Informatics

Edited Book

1. C-H. Hsu, M. Xu, H. Cao, H. Baghban, and A B M S. Ali (Ed.), *Big Data Intelligence and Computing*, Springer, ISBN: 978-981-99-2233-8

Journal Publication

1. **Muna, L. R.**, Brodie, G., Singh, A., Hills, J., Wandres, M., & Damlamian, H. (2023). *Understanding ecosystem services for climate change resilience in coastal environments: A case study of low-canopy sub-tidal seagrass beds in Fiji*. *Frontiers in Marine Science*, 10, 1184568. <https://doi.org/10.3389/fmars.2023.1184568>
2. **Singh, D and Railoa, K.** (2023). *Common Traditional Medicinal Seaweeds Used by Indigenous Fijians in Viti Levu, Fiji Islands*. *Journal of New and Pacific Studies*. 11(1), pp 45-55. Doi: https://doi.org/10.1386/nzps_00147_7
3. Shiiba, N., **Priyatma Singh, Dhrishna Charan**, Kushaal Raj, Stuart, J., Pratap, A. and Maekawa, M., 2023. *Climate change and coastal resiliency of Suva, Fiji: a holistic approach for measuring climate risk using the climate and ocean risk vulnerability index (CORVI)*. *Mitigation and Adaptation Strategies for Global Change*, 28(2), p.9.
4. **Sekove Vodo**, Asish Narayan Murti, Rusiate Faivakibau, Epeli Roger (2023) *Harnessing the Potential of Coconut Biofuels and Value-Added Products for Sustainable*

Development in Fiji: Challenges and Prospects, Journal of the Saudi Society of Agricultural Sciences. (UNDER REVIEW)

5. **Orcherton, D.F** (2023). *Bridging Cultures in Distance Education: A Confluence of Critical Pedagogy of Place and Indigenous Education Philosophy (Case-Study Reference in Fiji and Vanuatu)*. International Journal of Innovative Science and Research Technology (IJISRT). <https://ijisrt.com/bridging-cultures-in-distance-education-a-confluence-of-critical-pedagogy-of-place-and-indigenous-education-philosophy-casestudy-reference-in-fiji-and-vanuatu> SJIF Impact Factor: 7.176.
6. **Orcherton, D.F** (2023). *Reconciling the dual worldviews of ancient wisdom and modernity: collaborative-learning implications for future discourse*. M – 00350. Analytical Article. (2023) 03 (02) Journal of Environmental Law and Policy 55-83. <https://doi.org/10.33002/jelp03.02.03>
7. Mumtaz Ali, **Ramendra Prasad**, Yong Xiang, Mehdi Jamei, Zaher Mundher Yaseen (2023) *Ensemble robust local mean decomposition integrated with random forest for short-term significant wave height forecasting*. Renewable Energy. Vol. 205, pp 731-746, Doi: <https://doi.org/10.1016/j.renene.2023.01.108> (Q1; Impact Factor: 8.634; SNIP: 2.381; 90th percentile).
8. Manendra Prasad, **Ramendra Prasad** (2023) *Bifacial vs monofacial grid-connected solar photovoltaic for small islands: A case study of Fiji*. Renewable Energy. Vol. 203, pp 686-702, Doi: <https://doi.org/10.1016/j.renene.2022.12.068> (Q1; Impact Factor: 8.634; SNIP: 2.381; 90th percentile).
9. Lionel P Joseph, Ravinesh C Deo, **Ramendra Prasad**, Sancho Salcedo-Sanz, Nawin Raj, Jeffrey Soar (2023) *Near real-time wind speed forecast model with bidirectional LSTM networks*. Renewable Energy, Vol. 204, pp 39-58, Doi: <https://doi.org/10.1016/j.renene.2022.12.123>. (Q1; Impact Factor: 8.634; SNIP: 2.381; 90th percentile).
10. **Orcherton, D.F** (2023). *Intangible Losses, Damages, and At-Risk Settlements: The Extent of Causality and Burden of Proof for Climate Related Loss and Damage in the Fiji Islands*. M – 00341. Analytical Article. (2023) 03 (01) Journal of Environmental Law and Policy 108-131 <https://doi.org/10.33002/jelp03.01.03>
11. Mumtaz Ali, Mehdi Jamei, **Ramendra Prasad**, Masoud Karbasi, Yong Xiang, Borui Cai, Shahab Abdulla, Aitazaz Ahsan Farooque, Abdulhaleem H Labban (2023) *New achievements on daily reference evapotranspiration forecasting: Potential assessment of multivariate signal decomposition schemes*. Ecological Indicators. Vol. 155, pp 111030, Doi: <https://doi.org/10.1016/j.ecolind.2023.111030> (Q1; 95th percentile).
12. Nasrin Fathollahzadeh Attar, Mohammad Taghi Sattari, **Ramendra Prasad**, Halit Apaydin, (2023). *Comprehensive review of solar radiation modeling based on artificial intelligence and optimization techniques: future concerns and considerations*. Clean Technologies and Environmental Policy. Vol. 25, pp 1079-1097, Doi: <https://doi.org/10.1007/s10098-022-02434-7> (Q1; 90th percentile).
13. Sujan Ghimire, Thong Nguyen-Huy, **Ramendra Prasad**, Ravinesh C Deo, David Casillas-Perez, Sancho Salcedo-Sanz, Binayak Bhandari (2023). *Hybrid Convolutional*

Neural Network-Multilayer Perceptron Model for Solar Radiation Prediction. Cognitive Computation. Vol. 15, pp 645–671, Doi: <https://doi.org/10.1007/s12559-022-10070-y> (Q1; 82nd percentile).

14. H Feizi, Muhammed T. Sattari, **Ramendra Prasad**, Halit Apaydin (2023). *Comparative analysis of deep and machine learning approaches for daily carbon monoxide pollutant concentration estimation*. International Journal of Environmental Science and Technology. Vol. 20, pp 1753-1768, Doi: <https://doi.org/10.1007/s13762-022-04702-x> (Q1; 88th percentile).
15. Chaudhary, K., Prasad, A., Prasad, A. & Sharma, B., Robot Motion Control using Firefly Stepping Ahead Algorithm and Kinematic Equations. *Applied Computing and Informatics*. ELSEVIER, 2023 (Accepted).
16. Chand, P. P., Prasad, A. & Raj, S., 2024. Adapting to changes in Higher Education posed by COVID-19 pandemic. In: *Leadership & Learning: COVID 19 Pandemic and Beyond*. Unifiji press, 2023 (Accepted), 2023.
17. Z. Buksh, R. Raj, N. Sharma and S. Ali, Leveraging Blockchain Technology in Digital Forensics: A Comprehensive Literature Review on Strategies for Safeguarding Digital Evidence and Information, *Blockchain: Research and Applications*, ELSEVIER, 2023 (Accepted).
18. Gomasta, S. S., Dhali, A., Tahlil, T., Anwar, M. M., and **Ali**, S., PharmaChain: Blockchain-based Drug Supply Chain Provenance Verification System, *Heliyon*, ELSEVIER, 2023.
19. Habiba, M., Islam, M. R., Muyeen, S. M. and **Ali**, S., Edge Intelligence for Network Intrusion Prevention in IoT Ecosystem, *Computer and Electrical Engineering*, ELSEVIER, 2023.
20. A. Kumar, H. Jamnadas, V. Sharma, S. **Ali**, and SM. Muyeen, “Image Steganography Tools. A Review Till Date,” *The International Journal of Computers and Their Applications*, USA, 2023.
21. A. Kumar, M. Sami, V. Sharma, A. Prasad, S. **Ali**, and A. Narayan, “E-Learning Platforms Analysis- A Review Till Today,” *The Hong Kong Journal of Social Sciences*, Hong Kong, 2023.
22. Aurpa, Tanjim Taharat and Rifat, Richita Khandakar and Ahmed, Md Shoab and Anwar, Md Musfique and **Ali**, A. B. M. Shawkat, UDDIPOK: A reading comprehension based question answering dataset in Bangla language, *Data in Brief*, ELSEVIER, 2023. M
23. Milad Sharaf, Saeed Samadianfard, Javad Behmanesh and **Ramendra Prasad**, 2023. Integration of fruit fly and firefly optimization algorithm with support vector regression in estimating daily pan evaporation", *International Journal of Biometeorology*, DOI: <https://doi.org/10.1007/s00484-023-02586-1> (Q2; 82nd percentile).
24. Milad Sharaf, Hamed Talebi, Saeed Samadianfard, and **Ramendra Prasad**, 2023. A novel method for estimating daily evapotranspiration based on one, two, and three-day meteorological records using the long short-term memory model combined with

feedforward neural networks. Earth Science Informatics, DOI: <https://doi.org/10.1007/s12145-023-01150-0> (Q2; 73rd percentile).

Conference Papers

1. K. Chaudhary, **A. Prasad** and B. Sharma, "Reinforcement Learning at the Forefront of Robot Path Planning," *2023 International Aegean Conference on Electrical Machines and Power Electronics (ACEMP) & 2023 International Conference on Optimization of Electrical and Electronic Equipment (OPTIM)*, Istanbul, Turkiye, pp. 1-8, 2023,
2. **R. R. Chand**, **S. AMB Ali**, and P. Zhang, "Blockchain-Based Smart Contracts for Land Title Registry Opportunities and Adaption for Fiji", in 6th IEEE International Conference on Blockchain -IEEE Cybermatics Congress, Hainan, China, 2023.
3. **R. R. Chand** and **N. A. Sharma**, "Development of Bilingual Chatbot for University Related FAQs Using Natural Language Processing and Deep Learning," *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, vol. 13864 LNCS, pp. 83–94, 2023
4. **R. Kumar** and **N. A. Sharma**, "Leveraging Web Application to Enhance Transport Mobility: Optimize Bus Schedules and Ride-Share in Fiji's Central Division". *2023 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*, Shangri-La, Fiji, 2023 – Accepted
5. **R. Kumar** and **N. A. Sharma**, "Navigating Cybersecurity Challenges: A Contemporary Analysis of Fiji Islands". *2023 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*, Shangri-La, Fiji, 2023 – Accepted
6. **A. Prasad** and **N. A. Sharma**, "A Comparative Analysis of Joomla, Drupal, WordPress, and ASP.NET: Exploring Features, Performance, and Suitability". *2023 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*, Shangri-La, Fiji, 2023 – Accepted
7. **Kumar, A.**, Prasad, S., **Kumar, K.** "Analyzing User Vulnerability to Phishing attacks using Machine Learning Techniques: A Case Study on University Data". *2023 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*, Shangri-La, Fiji, 2023 – Accepted
8. Sharma, K. and **Kumar, K.** "Paper Title: Analyzing Fiji's Export Performance of Agricultural Fresh Produce using Machine Learning Techniques". *2023 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*, Shangri-La, Fiji, 2023 – Accepted

9. Chand, S., Naidu, A., **Kumar, K.** “Predicting Heart Disease based on Patient History using Machine Learning Techniques”. *2023 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*, Shangri-La, Fiji, 2023 – Accepted

Projects

I. Resilience to Climate Vulnerability and Environmental Risk (RECOVER): A Focus on Small Islands

FJD 226,700.00 research grant will be deposited to The University of Fiji over the three years. Total Budget - CAD1,000,000.00

Timeline

Progress/Updates: CLARE is jointly designed and run by the United Kingdom's Foreign, Commonwealth and Development Office (FCDO) and Canada's International Development Research Centre (IDRC). Through long-term commitments and partnerships worldwide and needs-driven, action-focused research, the UK (United Kingdom) and Canada are bridging critical gaps between science and action: developing new tools and supporting partner governments, communities, and the private sector to use evidence and innovation to drive effective solutions to the climate challenge whilst building the capacity of both those carrying out the research and those using the resulting evidence. SOST with University of Mauritius, University of Maldives, and University of Waterloo, have received CAD1,000,000.00 and FJD 226,700.00 research grant will be deposited to The University of Fiji over the three years to research on Climate Data analysis using modern Machine Learning algorithms.

II. Testing Market Efficiency of Plastic Waste Management in Communities experiment

Funded by the United Nations Development Fund (UNDP)

18,400.00 FJD

Timeline: Nov-2022 - Feb 2023

Progress/Updates: The project successfully completed this year. A final interview was conducted with a dissemination video in progress.

III. Development of Entrepreneurial Skills Post COVID-19 through Rural Aquaculture

USAID-funded project.

350,000 USD (742,000 FJD)

Timeline: Sep-2019 - Jan 2023

Progress/Updates: The USAID-PAF aquaculture project is progressing positively, with the community actively participating in training sessions and taking ownership of pond activities. However, a notable setback occurred recently with the flooding of the pond during the peak of Cyclone Mal. Currently, our main priority is repairing the main gate to secure the ponds and farm, mitigating the risk of similar incidents

in the future. The repair work is underway to ensure the safety and well-being of the fish stock. As of now, we are planning to conduct the harvest in December and to ensure its success, Aquaculture consultant Dr. Rajesh will be conducting a refresher training session in the community pre-harvest. Stocking for the current operational pond and an additional 3 ponds next cycle will commence once the main gate is successfully restored. In terms of project timeline, PIDF and UniFiji's Dr. Navneel Prasad are actively working on finalizing at least three tentative dates for a one-day workshop. This workshop aims to share our business plan with the relevant stakeholders. This month, a new Research Assistant has joined the team to contribute to the ongoing efforts and ensure smooth coordination within the project.

IV. **National implementation of global goals: Coherence between Nationally Determined Contributions (NDC) and the Sustainable Development Goals (SDG).**

Funded by Stockholm Environment Institute and Linköping University, Sweden.

FJD 90,000

Commenced in 2021

Progress/Updates: The final report has been submitted to Stockholm Environment Institute. Lead Investigator, Priyatma Singh presented the findings at the 2023 Radboud International Conference on Earth Systems Governance that was hosted in a hybrid mode in the Netherlands (<https://www.earthsystemgovernance.org/2023radboud/>). The team will work on the Policy brief in December 2023.

V. **Transforming Energy Access – Learning Partnership (TEA-LP)**

Funded by UK Aid and overseen by the Carbon Trust

£16700.00

Progress/Update: The Department of Science – SOST has been awarded a small grant under the Transforming Energy Access-Learning Partnership (TEA-LP) project funded by the UKAid. Two of the TEA-LP that will be taken up and localized include: Course#1: Local Solutions for Energy Access; and Course #2: Mini-grids: Design and Operations. These two TEA-LP courses have been combined as one elective course in the MScREM programme. The tentative name of the new proposed elective course is Course Code: REM408; Course Name: Energy Access Solutions and Mini Grid Design.

The course outline has been prepared and was communicated with the Partners for their feedback. The updated one was vetted by the Department and the BOS for the approval and has also been approved by the Senate. It has been submitted to the ADO to begin with the FHEC registration process.

VI. **Food Security in Vulnerable Islands: A Comparative Study between Kiribati and Fiji Islands.**

Funded by Action on Poverty

\$29,587.07 FJD

The surveys have been completed and the team is analyzing the outcomes.